ABSTRACT OF THE DISCLOSURE

The invention relates to methods and systems for predicting or estimating the

melting temperature of duplex nucleic acids, particularly duplexes of oligonucleotides which

5   may be used, for example, as primers or probes in PCR and/or hybridization assays. The

invention also relates to methods and systems for designing and selecting oligonucleotide probes

and primers having a predicted melting temperature which is optimized for such assays. To this

end, algorithms and methods are provided for predicting the melting temperature of a nucleic

acid having a predetermined sequence. These methods and algorithms estimate the melting

10   temperature of a nucleic acid duplex under particular salt conditions. The methods and

algorithms use novel formulas, having terms and coefficients that are functions of the particular

nucleotide sequence, to estimate the effect of particular salt conditions on the melting

temperature. As such, the methods and systems of the invention provide superior result

compared to existing methods, which do not consider sequence dependent effects of changing

15   salt conditions.